

WHAT IS CLAIMED IS:

1. An electronic component comprising:
  - a cloth-containing core substrate made by forming a resinous material, or a composite material obtained by mixing 5 a resin and a powdery functional material into a thin sheet;
  - a thin-film conductor formed and patterned by thin-film forming technology on at least either of front and rear surfaces of the core substrate;
  - a clothless layer superposed on at least that surface of 10 the core substrate on which the thin-film conductor has been formed, and formed from a clothless resin-coated metal foil obtained by coating one surface of a metal foil with a resinous material, or a composite material obtained by mixing a resin and a powdery functional material, the metal foil being 15 patterned.
2. The electronic component as set forth in claim 1, wherein the clothless layer is formed by placing a plurality of such clothless layers one upon another.

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3. An electronic component including a laminated product comprising:
  - a cloth-containing core substrate made by forming a resinous material, or a composite material obtained by mixing 25 a resin and a powdery functional material into a thin sheet;

a thin-film conductor formed and patterned by thin-film forming technology on at least either of the front and rear surfaces of the core substrate;

5 a clothless layer superposed on at least that surface of the core substrate on which the thin-film conductor has been formed, and formed from a clothless resin-coated metal foil obtained by coating one surface of a metal foil with a resinous material, or a composite material obtained by mixing a resin and a powdery functional material, the metal foil being 10 patterned;

the component being obtained by interposing a prepreg between a plurality of laminated products and/or between the laminated product and the core substrate having a thin-film conductor or the metal foil, laminating them and uniting them 15 together by compression under heat.

4. The electronic component as set forth claim 1, wherein the core substrate and the thin-film conductor mainly constitute an inductive element, and the clothless layer and 20 a conductor layer formed by the patterning of the metal foil mainly constitute a condenser and a wiring pattern.

5. The electronic component as set forth claim 3, wherein the core substrate and the thin-film conductor mainly 25 constitute an inductive element, and the clothless layer and

a conductor layer formed by the patterning of the metal foil mainly constitute a condenser and a wiring pattern.

6. The electronic component as set forth in claim 1,  
5 wherein the resin comprises at least one kind of thermosetting resin selected from among an epoxy resin, a phenol resin, an unsaturated polyester resin, a vinyl ester resin, a polyimide resin, a bismaleimidetriazine (cyanate ester) resin, a polyphenylene ether (oxide) resin, a fumarate resin, a 10 polybutadiene resin and a vinylbenzyl resin; or at least one kind of thermoplastic resin selected from among an aromatic polyester resin, a polyphenylene sulfide resin, a polyethylene terephthalate resin, a polybutylene terephthalate resin, a polyethylene sulfide resin, a polyether ether ketone resin, a 15 polytetrafluoroethylene resin, a polyarylate resin and a graft resin; or a resin obtained by combining at least one kind of such thermosetting resin and at least one kind of such thermoplastic resin.

20 7. The electronic component as set forth in claim 3,  
wherein the resin comprises at least one kind of thermosetting resin selected from among an epoxy resin, a phenol resin, an unsaturated polyester resin, a vinyl ester resin, a polyimide resin, a bismaleimidetriazine (cyanate ester) resin, a 25 polyphenylene ether (oxide) resin, a fumarate resin, a

polybutadiene resin and a vinylbenzyl resin; or at least one kind of thermoplastic resin selected from among an aromatic polyester resin, a polyphenylene sulfide resin, a polyethylene terephthalate resin, a polybutylene terephthalate resin, a 5 polyethylene sulfide resin, a polyether ether ketone resin, a polytetrafluoroethylene resin, a polyarylate resin and a graft resin; or a resin obtained by combining at least one kind of such thermosetting resin and at least one kind of such thermoplastic resin.

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8. The electronic component as set forth claim 1, wherein the powdery functional material comprises at least one kind of ferrite magnetic material selected from among Mn-Mg-Zn, Ni-Zn and Mn-Zn; at least one kind of ferromagnetic metal 15 material selected from among iron carbonyl, an iron-silicon alloy, an iron-aluminum-silicon alloy, an iron-nickel alloy and an amorphous (iron or cobalt) alloy; or at least one kind of dielectric material selected from among BaO-TiO<sub>2</sub>-Nd<sub>2</sub>O<sub>3</sub>, BaO-TiO<sub>2</sub>-SnO<sub>2</sub>, PbO-CaO, TiO<sub>2</sub>, BaTiO<sub>3</sub>, PbTiO<sub>3</sub>, SrTiO<sub>3</sub>, CaTiO<sub>3</sub>, Al<sub>2</sub>O<sub>3</sub>, 20 BiTiO<sub>4</sub>, MgTiO<sub>3</sub>, (Ba, Sr)TiO<sub>3</sub>, Ba(Ti, Zr)O<sub>3</sub>, BaTiO<sub>3</sub>-SiO<sub>2</sub>, BaO-SiO<sub>2</sub>, CaWO<sub>4</sub>, Ba(Mg, Nb)O<sub>3</sub>, Ba(Mg, Ta)O<sub>3</sub>, Ba(Co, Mg, Nb)O<sub>3</sub>, Ba(Co, Mg, Ta)O<sub>3</sub>, Mg<sub>2</sub>SiO<sub>4</sub>, ZnTiO<sub>3</sub>, SrZrO<sub>3</sub>, ZrTiO<sub>4</sub>, (Zr, Sn)TiO<sub>4</sub>, BaO-TiO<sub>2</sub>-Sm<sub>2</sub>O<sub>3</sub>, PbO-BaO-Nd<sub>2</sub>O<sub>3</sub>-TiO<sub>2</sub>, (Bi<sub>2</sub>O<sub>3</sub>, PbO)-BaO-TiO<sub>2</sub>, La<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>, Nd<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>, (Li, Sm)TiO<sub>3</sub>, Ba(Zn, Ta)O<sub>3</sub>, Ba(Zn, Nb)O<sub>3</sub> and 25 Sr(Zn, Nb)O<sub>3</sub>; or a functional material obtained by combining

at least two kinds of materials selected from among the ferrite magnetic material, ferromagnetic metal material and dielectric material.

5           9.       The electronic component as set forth claim 3, wherein the powdery functional material comprises at least one kind of ferrite magnetic material selected from among Mn-Mg-Zn, Ni-Zn and -Mn-Zn; at least one kind of ferromagnetic metal material selected from among iron carbonyl, an iron-silicon 10 alloy, an iron-aluminum-silicon alloy, an iron-nickel alloy and an amorphous (iron or cobalt) alloy; or at least one kind of dielectric material selected from among BaO-TiO<sub>2</sub>-Nd<sub>2</sub>O<sub>3</sub>, BaO-TiO<sub>2</sub>-SnO<sub>2</sub>, PbO-CaO, TiO<sub>2</sub>, BaTiO<sub>3</sub>, PbTiO<sub>3</sub>, SrTiO<sub>3</sub>, CaTiO<sub>3</sub>, Al<sub>2</sub>O<sub>3</sub>, BiTiO<sub>4</sub>, MgTiO<sub>3</sub>, (Ba, Sr)TiO<sub>3</sub>, Ba(Ti, Zr)O<sub>3</sub>, BaTiO<sub>3</sub>-SiO<sub>2</sub>, BaO-SiO<sub>2</sub>, 15 CaWO<sub>4</sub>, Ba(Mg, Nb)O<sub>3</sub>, Ba(Mg, Ta)O<sub>3</sub>, Ba(Co, Mg, Nb)O<sub>3</sub>, Ba(Co, Mg, Ta)O<sub>3</sub>, Mg<sub>2</sub>SiO<sub>4</sub>, ZnTiO<sub>3</sub>, SrZrO<sub>3</sub>, ZrTiO<sub>4</sub>, (Zr, Sn)TiO<sub>4</sub>, BaO-TiO<sub>2</sub>-Sm<sub>2</sub>O<sub>3</sub>, PbO-BaO-Nd<sub>2</sub>O<sub>3</sub>-TiO<sub>2</sub>, (Bi<sub>2</sub>O<sub>3</sub>, PbO)-BaO-TiO<sub>2</sub>, La<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>, Nd<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>, (Li, Sm)TiO<sub>3</sub>, Ba(Zn, Ta)O<sub>3</sub>, Ba(Zn, Nb)O<sub>3</sub> and Sr(Zn, Nb)O<sub>3</sub>; or a functional material obtained by combining 20 at least two kinds of materials selected from among the ferrite magnetic material, ferromagnetic metal material and dielectric material.

10.      A process for manufacturing an electronic component comprising:

forming a resinous material, or a composite material obtained by mixing a resin and a powdery functional material into a thin sheet and curing it to make a core substrate;

5 forming a thin-film conductor having a specific pattern by thin-film forming technology on at least either of the front and rear surfaces of the core substrate;

superposing on the core substrate a clothless resin-coated metal foil obtained by coating one surface of a metal

10 foil with a resinous material, or a composite material obtained by mixing a resin and a powdery functional material so that its clothless resin-coated surface may lie on at least that surface of the core substrate on which the thin-film conductor has been formed, and compressing them together under heat into a unitary body;

15 patterning the metal foil to form a specifically shaped conductor layer.

11. The process for manufacturing an electronic component as set forth in claim 10, wherein the step of superposing the clothless resin-coated metal foil on an existing layer and compressing them together under heat and the step of patterning the metal foil to form a specifically shaped conductor layer are repeated a specific number of times.

25 12. A process for manufacturing an electronic com-

ponent comprising:

forming a resinous material, or a composite material obtained by mixing a resin and a powdery functional material into a thin sheet and curing it to make a core substrate;

5 forming a thin-film conductor having a specific pattern by thin-film forming technology on at least either of the front and rear surfaces of the core substrate;

superposing on the core substrate a clothless resin-coated metal foil obtained by coating one surface of a metal 10 foil with a resinous material, or a composite material obtained by mixing a resin and a powdery functional material so that it may lie on at least that surface of the core substrate on which the thin-film conductor has been formed, and compressing them together under heat into a unitary body;

15 patterning the metal foil to form a specifically shaped conductor layer;

performing once the steps of compressing the clothless resin-coated metal foil into a unitary body and forming the conductor layer or repeating them two or more times to form a 20 laminated product;

interposing a prepreg between a plurality of laminated products and/or between any laminated product and the core substrate having a thin-film conductor or the metal foil, laminating them on one another and compressing them together 25 into a unitary body.